

# TECHNOLOGY @ ROCKY FLATS

## *Explosive Demolition*

The driver for explosive demolition was worker safety; i.e., removing workers from the vicinity of unstable structures, and to improve demolition efficiency for concrete buildings. The major difficulty in implementation was to assure the public of the Site's ability to control any release of radioactivity through decontamination, modeling, water spray, monitoring, and test projects. Coordination with public and regulatory organizations was key to the successful deployment of this technology.

The explosive demolition process used commercial explosive demolition contractors to explosively cut the building

structural members and allow the structure to collapse upon itself, or implode. The resulting debris was then most often disposed of as sanitary waste or as recycled concrete using standard construction equipment. In the case of Building 881 (shown below) where the building was mostly underground and had no plutonium contamination, the building was first decontaminated of uranium and beryllium, had most mechanical, electrical, and structural metal components removed. The concrete structure, originally designed to withstand aerial bombardment, was then explosively demolished and the concrete debris was left in place and filled to grade with regulatory approval.



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Explosives were used to topple air stacks and guard towers (shown below). Prior to demolition, building surfaces were first decontaminated if necessary to release levels or acceptable residual contamination levels. During demolition, water sprays were used to reduce fugitive dust emission and the air monitored in the vicinity of the demolition to confirm the absence of contaminant releases (no detectable releases occurred).

Although the demolition is rapid, there were substantial preparation times, some of which could not be conducted in parallel with in-building activities. The building structural members needed to be weakened so that the final explosive detonations would confidently collapse the structure. This added additional structural engineering analysis to verify that adequate building structural integrity was maintained for

worker safety. The technology depended on decontamination and surveying techniques and on air dispersion and other computer modeling of short and extended-duration demolition activities. Transport of explosives on Site also provided significant security and safety authorization basis challenges.

Routine commercial demolition of buildings with large excavators proved to be a comparatively cheaper, more controllable demolition technology for one-story or two-story metal frame buildings. Based on these additional challenges required to implement explosive building demolition, it was only used for one large facility, Building 881, due to that building's unique circumstances. Explosives were used more often and were relatively more effective for smaller scope applications, such as towers and stacks.

